Hoopa Valley
Solid Waste Management Plan

Developed by:

Tribal Environmental Protection Agency (TEPA)
and
Hoopa Valley Public Utilities District (PUD)

EXECUTIVE SUMMARY

The Tribe has been notified by the U.S. Environmental Protection Agency that Hoopa's landfill must be closed because it is not in compliance with federal standards. The dump could be scheduled to close by the summer of 1997. TEPA and PUD have prepared a Solid Waste Management Plan that proposes three different alternatives for the future management of Hoopa's garbage.

This Solid Waste Management Plan is derived from the 1994 Draft Solid Waste Management Plan. The 1994 draft plan outlined six alternative strategies the Tribe could use to dispose of the Reservation's household solid waste. The conclusions drawn from the draft plan is that as the nearest landfill is over 70 miles away, a solid waste transfer station with recycling capabilities is the best long term solution to the solid waste problems confronting the Tribe. Although dealing with solid waste is very expensive, the plan will makes every effort to reduce costs to the Tribal Membership and the community.

The Old County Landfill was located in Agency Field on the east side of the Trinity River. Since 1973, the residents of the Reservation have discarded their waste at either the Supply Creek Landfill or at the 15 smaller illegal dump sites which are scattered within ½ mile of the valley floor. The Supply Creek Landfill was constructed, operated, and maintained by the Bureau of Indian Affairs (BIA) between 1973 and 1986. Three open pits approximately 40 feet by 300 feet were dug by the BIA, two of these have been covered with soil, and the third is currently accepting waste. Very little enforcement has performed at the Supply Creek landfill to regulate what is been deposited and there are no accurate records as to what has been dumped. The Tribe has received approximately $320,000 from the BIA to close the landfill, and approximately $30,000 from the EPA for closure planning documents.

The landfill closure report shall have three phases. Phase 1 will include a detailed topographic site map, waste characterization, waste pit soil profiles, depth of waste,

area of waste, and the development of cost estimates for the following seven alternatives:

1. Cover Landfill With High Density Polyethylene Membrane
2. Cover Landfill With Imported Clay
3. Cover Landfill With On-site Soils
4. Cover Landfill With On-site Soils Mixed with Bentonite
5. Cover Landfill With Manufactured Clay
6. Clean Close Landfill By Removing The Entire Two Acres Of Landfill
7. Clean Close Landfill By Removing Contaminated Soil Only

Phase two will include the development of the construction plans, a request for bids, and a selection of a contractor for the alternative selected by the Tribal Council. Phase three will be the construction of the selected landfill closure alternative.

The HVIR currently generates approximately 1,220 tons of waste and recyclable materials annually from the 3,346 inhabitants of the Reservation. Approximately 80% of the reservation's total waste is from households depositing 30 gallon bags of waste directly at the current landfill. The remaining 20% of the total waste is from commercial/industrial businesses paying the local waste management company to haul their waste to Sugar Bowl (98 tons) or tribal entities hauling waste to the Supply Creek Landfill (146 tons).

Because of the high disposal costs involved, every effort has been made to incorporate an integrated waste management approach which focuses on the reduction of Hoopa's overall waste volumes. This strategy emphasizes education, source reduction, recycling, and composting as ways to reduce Hoopa's total waste volumes.

Although managing solid waste is very expensive, every effort has been made to reduce costs to the Tribal Membership and the community. User fees have been developed for each alternative. The Sugar Bowl Transfer Station currently charges $2.30 per can and Tom's Trash charges $3.30/week for collection of one 30-gallon cans of garbage.

A user fee is the cost an individual must pay to utilize the waste management system. User fees for all alternatives have been calculated to cover the expenses associated with each alternative at various levels of service. Figure 1 is a detailed comparison of the alternatives likelihood of success, jobs created, tribal government operating expenses, minimum user fee required to break even, and net revenue at $3.30 per household. The only ways to lower the individual household user fees are as follows:

1. Reduce the total tons of waste generated on the Reservation.
2. Reduce the tipping fee at landfill.

3. Reduce trucking costs to landfill.
4. Increase the number of customers utilizing the waste management service.
5. Initiate a subsidy to individual households.

Several management objectives have been developed in order to reduce the reservations overall solid waste costs. The management objectives are the same for all of the alternatives as they are intended to assist in the reduction of overall waste output by 20% within one year and 40% within five years. The goal of the Tribe's Solid Waste Management Plan is to establish a viable and successful strategy to manage the solid waste generated on the HVIR. In order to accomplish this task, the following management objectives must be accomplished:

1. Ensure financial self-sufficiency.
2. Ensure that the cost of using the solid waste management system will be as low as possible per individual user.
3. Strictly enforce any anti-dumping regulations.
4. Reduce the overall quantity of waste generated on the reservation.
5. Reduce the amount of household solid waste transported from the Reservation by 20% within two years.
6. Reduce the amount of household solid waste transported from the Reservation by 40% within five years.
7. Increase the efficiency of material utilization and the amount of reusable and repairable materials used.
8. Reduce the amount of non recyclable materials used.
9. Increase the amount of organic waste composted.
10. Reduce over-packaging.
11. Develop an integrated approach to solid waste management

Alternative One - Hoopa Transfer Station: A transfer station would be built either on dump road or at the proposed Cal-Pac industrial park, and would be open to the public. This alternative considers the costs of maintaining a transfer station using the Anderson landfill in Redding as the final disposal site for all waste generated on the Reservation.

Under this alternative, the garbage would be hauled in 40 cubic yard containers to the Anderson landfill in Redding. Utilizing the Anderson landfill is less expensive than using the Eureka landfill. The Eureka landfill could be closed as soon as fall 1997. Hauling trash to Redding would save approximately $37,000/year for the first two years of operation and $56,000/year once the Eureka landfill closes. TEPA has been informed that Humboldt County will raise their disposal rates because of expected

higher operating costs associated with the County's new waste management system. If the Humboldt County landfill is utilized, user fees would need to increase in order to make the operation economically feasible. As a result of the substantially higher costs, alternative one is designed around transporting trash to Redding.

Construction costs for this alternative total $822,000 for Lot 20 Agency field and total $504,000 for construction at Cal-Pac Industrial Park. Under Alternative One, two trash truck driver positions, one station manager, and one contract garbage hauler are created. If the Tribe were to select this alternative the County would likely require all the waste management operator to comply with California source reduction requirements. Mobile recycling opportunities will be available at the shopping center and Youth Center. Strict enforcement of the proposed Solid Waste Management Ordinance will be required to reduce illegal dumping of household trash, appliances, and hazardous waste.

Alternative 1. Evaluation Based on 675 households	
Construction Costs	Lot 20 $822,300 Cal-Pac $504,100
Government Operating Costs	$45,000
Yearly Operating Costs	$239,403
Net Revenue @ $3.30 HH 675/WK	($92,043)
Minimum User Fee Required	$6.22
Jobs Created	2.75
Likelihood of Success	Low

Alternative Two - Sugar Bowl with Home Collection:

2a. HVPUD or HVDE Operates Home Collection Service.

The Tribe would purchase a trash truck and the necessary equipment for a home pickup service. Humboldt County will provide the Tribe with the use of existing equipment to dispose of the trash at the Sugar Bowl. One or two cans of trash per week would be picked up at each home. Large commercial-size bins would also be serviced weekly. The trash truck would take the garbage to the Sugar Bowl Transfer Station. Under this alternative only the Eureka landfill could be used.

Equipment costs to provide home collection service to all households totals $188,500. TEPA has been informed that the current charges for the Willow Creek Transfer Station would be increased if residents on trust land were to use the facility. The operation and maintenance costs associated with this alternative could potentially be divided between the County and the Hoopa Valley Tribe. Negotiations with the County on this and other issues will be directed by the Tribal Council and their representatives.

If the Tribe were to select this alternative the County would likely require the waste management operator to comply with California source reduction requirements. Mobile recycling opportunities will be available at the shopping center and Youth Center. Strict enforcement of the proposed Solid Waste Management Ordinance will be required to reduce illegal dumping of household trash, appliances, and hazardous waste.

Alternative 2a. Evaluation Based on 675 households	
Construction Costs	$188,500
Government Operating Costs	$45,000
Yearly Operating Costs	$230,844
Net Revenue @ $3.30 HH 675/WK	($83,434)
Minimum User Fee Required	$5.98
Jobs Created	2.75
Likelihood of Success	Low

2b. HVPUD franchise's with Private refuse collectors

Under this option, the Tribe could franchise home collection service to private refuse collectors, HVDE or another organization. Operating as a franchise with private refuse collectors will only provide service for the length of the franchise contract with the County, which is due to end in 1997. However, it is likely that this franchise or a similar franchise will be offered.

Equipment costs to would be limited $9,000 for the purchase of mobile recycling containers. Recycling opportunities will be available at the shopping center and Youth Center. Strict enforcement of the proposed Solid Waste Management Ordinance will be required to reduce illegal dumping of household trash, appliances, and hazardous waste. If the Tribe were to select this alternative the County would likely require the waste management operator to comply with California source reduction requirements.

Under this option each household would pay $3.60/can for home collection and $2.30 for self haul until the landfill closes in 1998. Once the landfill closes, the user fee is expected to increase to $4.15/can for home collection and $2.85 for self haul until. This alternative requires no fee collection by the Tribe, as the transfer station or home collection operators will collect the fees.

Alternative 2b. Evaluation Based on 675 households	
Construction Costs	$9,000
Government Operating Costs	$55,000
Yearly Operating Costs	$193,000
Net Revenue @ $3.30 HH 675/WK	($45,640)
Minimum User Fee Required	$4.90
Jobs Created	2.75
Likelihood of Success	Moderate

Alternative Three - Self-Haul to the Sugar Bowl:

All residents, including Hoopa Tribal Members, would be responsible for hauling their own garbage to the Sugar Bowl Transfer Station for disposal. Mobile recycling opportunities will be available at the shopping center and Youth Center. Alternative Three would provide the same level of service as Willow Creek area residents receive, as home collection would be available from Private refuse collectors and self hauling services at the Sugar Bowl Transfer Station. This alternative is the least expensive

alternative to solve the Tribe's solid waste management problems. The alternative would also incur the least amount of burden to existing Tribal infrastructure.

Equipment costs to would be limited $9,000 for the purchase of mobile recycling containers. Recycling opportunities will be available at the shopping center and Youth Center. Strict enforcement of the proposed Solid Waste Management Ordinance will be required to reduce illegal dumping of household trash, appliances, and hazardous waste. If the Tribe were to select this alternative the County would likely require the waste management operator to comply with California source reduction requirements.

Alternative 3. Evaluation Based on 675 households	
Construction Costs	-----
Government Operating Costs	$45,000
Yearly Operating Costs	-----
Net Revenue @ $3.30 HH 675/WK	
Minimum User Fee Required	$2.30 - $3.60
Jobs Created	1 or 2
Likelihood of Success	Moderate

Recommendations:

- Approve alternative 2b HVPUD franchise's with private refuse collectors.
    - Acquire a government surplus trash truck, trash bins and other miscellaneous solid waste equipment to be loaned to the franchise holder.
    - Negotiate franchise holder to pick up one can per week from all Tribal member households.(344 TMH)(52 weeks)($3.30 per can) = $60,000 per year
    - Give the option to all other household, Tribal departments and private businesses to pay to utilize the home collection service or self haul to the sugar bowl.
    - Draft a Solid Waste Management Ordinance
- Close the Supply Creek Landfill on April 21, 1997.
    - Select the clean closure alternative for the Landfill.
- Implement the source reduction and recycling component of the plan.

Insert Figure 1

Solid Waste Management Plan
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0.1 Introduction

Since 1973, the residents of the Hoopa Valley Indian Reservation (HVIR) have discarded their waste primarily at the Supply Creek Landfill. Since the current system of solid waste management does not comply with the existing federal regulations outlined in the Resource Conservation Recovery Act, 40 CFR Part 258 Subtitle D, the residents of the HVIR must find new alternatives to dispose of their solid waste. This solid waste management plan addresses the Tribe's priority of improving the Reservation's overall environmental quality by providing adequate solid waste management services. Cleaning up the Supply Creek Landfill and the 15 smaller dump sites is a major element of the Tribe's efforts to restore the reservation's drinking water supplies and overall environmental quality.

The RCRA regulations require that all solid wastes "be disposed of in an environmentally responsible manner." The operation of transfer stations is not specifically addressed in theses regulations, but because transfer stations serve as an intermediate step in solid waste disposal their environmentally sound care and disposal is required. In contrast the operation and closure of landfills is specifically addressed in the RCRA regulations. The RCRA sets forth revised minimal federal criteria for municipal solid waste landfills including location restrictions, design criteria, ground water monitoring, corrective action, financial assurance, and closure/post closure care requirements. Landfills that do not meet the criteria of the regulations are termed open dumps, and either must be improved to meet the criteria, or closed in compliance with the criteria.

The RCRA criteria apply to all sites which have received waste after October 9, 1995. Since waste has been accepted at the Supply Creek landfill after October 9, 1995, all requirements of the RCRA will apply.

Current EPA policy is to view Tribes as states. Therefore Tribes are considered key implementers of the Federal criteria. EPA does not permit or inspect landfills or open dump sites. The role of the EPA is officially limited to developing regulations and to improving Municipal Solid Waste Landfill permit programs. Enforcement by EPA is only authorized if EPA has formally determined a tribal program is inadequate. Submittal of a program is voluntary, so that if a tribe does not submit a program, EPA has no mechanism to deny the program or, to enforce the criteria. However a citizen may sue tribes in Federal Court under RCRA statute; sovereign immunity has not been found to apply. Such a case against the Sioux-Ogala Tribes was decided against the tribe's favor. In this case, an open was ordered to be cleaned up, and the cost to be borne by the tribe, BIA, IHS, and EPA.

The 1994 Draft Solid Waste Management Plan outlined six alternative strategies the Tribe could use to dispose of the Reservation's household solid waste. The conclusions drawn from the draft plan indicate the nearest landfill is over 70 miles away. The solid waste transfer station with recycling capabilities is the best long term solution to the solid waste problems confronting the reservation.

The 1996 Solid Waste Management Plan will concentrate on the following alternatives which were derived from the 1994 draft plan:

- Alternative One - Hoopa Transfer Station

- Alternative Two - Sugar Bowl with Home Collection:

a. HVPUD Operates Home Collection

b. HVPUD Franchises Home Collection

- Alternative Three - Self-Haul to the Sugar Bowl

- Alternative Four - No Action (Continue to use the Supply Creek Dump)

The HVIR currently generates approximately 1,220 tons of waste and recyclable materials annually from the 3,346 inhabitants of the Reservation. Because of the high disposal costs involved, every effort will be made to incorporate an integrated waste management approach which will focus on the reduction of Hoopa's overall waste volumes. This strategy will emphasize education, source reduction, recycling, and composting as ways to reduce Hoopa's total waste volumes.

In order to make the new system of solid waste management as efficient and effective as possible, a home collection service is under consideration for all households in the Hoopa Valley. It is believed that a home collection service offered at reasonable rates will achieve maximum reservation participation and result in a reduction of illegal dumping on the reservation.

Several funding grant programs will also be necessary to remove the health and environmental hazards associated with the current system of solid waste management. The potential health and environmental hazards associated with open dumps have been a concern of the community members, tribal officials, and governmental agencies for a long time.

This document is intended to provide a comprehensive two phase solid waste management plan that will address current solid waste problems, and provide practical

alternatives to current storage, collection, transportation, disposal, and control of solid waste on the HVIR. Phase one includes establishing an alternative collection and disposal method and is addressed in this document. Phase two includes cleaning up the existing dump site and closing it permanently. Phase two will also be analyzed in the upcoming landfill closure plan.

0.2 Geography

The HVIR is the largest Indian reservation in California and is located in the northeastern corner of Humboldt County, approximately 300 miles north of San Francisco, California. The valley floor, an alluvial plain approximately six miles long and one mile wide, is bisected in a north-south direction by the meandering Trinity River. The Reservation is separated into eight districts or fields which represent traditional villages of the Hupa.

Elevation on the HVIR varies from 320 feet above sea level on the valley floor to over 5,000 feet along the eastern mountain ridges. The terrain outside of the valley floor is best described as mountainous and rugged. The dominant forest vegetation in the mountain areas is Douglas Fir.

0.3 Population

The 1990 US Census indicated that there are 2,143 persons residing on the HVIR including 410 non-Indians. The Tribe believes that the 1990 census underestimated the number of residents and households occupied on the reservation. As a supplement to the census information, the Tribe normally uses the 1992 Bureau of Indian Affairs (BIA) Population and Labor Force Report. This report, unlike the census, utilizes a wide variety of sources including per capita distributions, Hupa Health patient records, and the Welfare Department's case loads. The BIA's report estimated the Reservation Native American population to be 2,936. Together, these reports estimate the total Reservation population at 3,346. By utilizing the revised population statistics, the population on the Reservation was determined to include 1,484 Hoopa, 1,452 other Native Americans, and 410 non-Indians.

0.4 Housing

The 1990 US census estimated the total number of households on the reservation to be 812. Since the census was taken, 48 homes have been constructed. This brings the total number of households on the reservation to 860. Approximately 735 households are within the valley floor and the remaining 125 homes are either in the Bald Hill region or in the forested areas.

The best estimate of the number of households occupied by at least one Hoopa HTM is approximately 344, other Native American 327, and nonnative 189. Based on the above sources, the average number of persons per Indian household is 4.3, and the average number of persons per non-Indian household is 2.2.

0.5 Past Solid Waste Management on the Reservation

Before European ideals were thrust upon the Hupa people, very little was discarded. When something was no longer useful, the item was either burned or discarded outside the living area where it rapidly blended into it's surroundings. Over the last century, the composition of waste has changed from strictly organic to a mixture of organic and inorganic substances. These changes have coincided with the scientific and technological advancements of the last few decades. The introduction of polymer chemicals into the waste stream has had a much greater impact on surface water, ground water, soils, and public health of the area than did the organic waste of the past.

The previous landfill was located in Agency Field on the east side of the Trinity River. This dump was destroyed during the flood of 1964. Since 1973, the residents of the Reservation have discarded their waste at either the Supply Creek Landfill or at the 15 smaller illegal dump sites which are scattered throughout the valley.

The current landfill, located in the upper watershed of Supply Creek, was constructed, operated, and maintained by the Bureau of Indian Affairs (BIA) between 1973 and 1986. Three open pits approximately 20 feet by 300 feet were dug by the BIA, two of these have been covered with soil, and the third is currently accepting waste. Very little enforcement is performed at the Supply Creek landfill to regulate what is been deposited and there are no accurate records as to what has been dumped. It would be reasonable to assume that the amount of polymer chemicals deposited in the open pits has gradually increased with the scientific and technological advancements of the last few decades.

Some legal problems have been identified with the reservations solid waste management plans. On May 26, 1992, Humboldt County renewed the solid waste franchise agreement with Tom’s Trash. This franchise agreement authorized the company to offer exclusive solid waste services to residents within the franchise boundaries. A large portion of the HVIR is within the franchise boundaries. Therefore, any solid waste activities undertaken by the Tribe may be in violation of the franchise agreement.

Currently, the legal departments of both the Hoopa Tribe and Humboldt County are researching the issue. Hoopa's legal department has given the opinion that the

franchise is not legal as the reservation has "Sovereign Nation Status". If the franchise is legal, the Tribe may not legally operate any solid waste operations until the present franchise agreement ends on June 30, 1997.

A number of illegal dump sites have been identified on the reservation. These locations are in the early stages of being mapped, marked with "no dumping" signs, and cleaned up when possible. Further work needs to be done on identifying and enforcing current litter abatement dumping regulations.

0.6 Management Objectives

Several management objectives have been developed in order to reduce the reservations overall solid waste costs. The management objectives are the same for all of the alternatives as they are intended to assist in the reduction of overall waste output by 20% within one year and 40% within five years. These management objectives have been designed to assist the Tribe in offsetting the expected rising costs for transporting and disposing of solid waste.

The 40% reduction in waste output will probably not reduce future solid waste costs, but diminish the impacts of future disposal cost increases. To achieve this goal, all households which produce waste on the Reservation must do their share to reduce the amount of waste each individual sends to the landfill.

The goal of the Tribe's Solid Waste Management Plan is to establish a viable and successful strategy to manage the solid waste generated on the HVIR. In order to accomplish this task, the following management objectives must be accomplished:

1. Ensure financial self-sufficiency.
2. Ensure that The cost of using the solid waste management system will be as low as possible per individual user.
3. Strictly enforce any anti-dumping ordinance.
4. Reduce the overall quantity of waste generated on the reservation.
5. Reduce the amount of household solid waste transported from the Reservation by 20% within two years.
6. Reduce the amount of household solid waste transported from the Reservation by 40% within five years.
7. Increase the efficiency of material utilization and the amount of reusable and repairable materials used.
8. Reduce the amount of non recyclable materials used.

9. Increase the amount of organic waste composted.
10. Reduce over-packaging.
11. Develop an integrated approach to solid waste management.

0.7 Waste generation

A solid waste intake survey at the Supply Creek Landfill estimated that approximately 730 tons of solid waste was received during 1993 (figure 0.2). Although the Supply Creek Landfill is restricted to use by HTMs only, it is estimated that approximately 60% of Hoopa's population disposes 585 tons of waste at the landfill. Tribal entities dispose an additional 146 tons into the Supply Creek Landfill annually.

The remaining 40% of the population (1,340 people), dispose of their waste at either the Sugar Bowl Transfer Station or at one of the 15 illegal dumpsites on the reservation. Assuming that each of the 1,340 people generate 1.6 pounds of waste per day and that commercial waste generators dispose 98 tons at Sugar Bowl, an additional 490 tons of waste will need to be transferred out of the valley annually. This estimate concludes that approximately 1,220 tons of waste are generated on the reservation annually (figure 0.3).

Approximately 80% of the reservation's total waste is from households depositing 30 gallon bags of waste directly at the current landfill. The remaining 20% of the total waste is from commercial/industrial businesses paying the local waste management company to haul their waste to Sugar Bowl (98 tons) or tribal entities hauling waste to the Supply Creek Landfill (146 tons).

In addition to the total waste volumes, a breakdown of the major components of the reservation waste stream was extrapolated from a 1990 waste stream assessment of unincorporated Humboldt County areas (figure 0.4). This data has, and should be used to identify materials to be reused, reduced, or recycled.

With limited recycling targeting only newspaper, HG paper, PETE plastic, HDPE plastic, CRV glass, recyclable glass, aluminum cans, tin cans, and bi-metal cans, approximately 57 tons of waste will be recycled. Composting yard and food waste will reduce an additional 37 tons. Recycling non-targeted materials will reduce Hoopa's waste stream by 150 tons (figure 0.5). These solid waste reduction measures will leave approximately 975 tons of solid waste which must be transported to a disposal site, reduce Hoopa's waste by approximately 20%, and save disposal and hauling fee's.

	Total Waste (tons)	Total 30 gal bags	Total 1.5 cy bins
year	730	37,800	---
month	61	3,150	---
week	15	787	---
day	2	113	---

Figure 0.2: 1993 Supply Creek Landfill Solid Waste Estimates.

	Total waste (tons)	Total 30 gal bags	Total 1.5 cy bins
year	1,220	55,714	780
month	102	4,623	65
week	23	1,071	15
day	3.3	152	2.3

Figure 0.3: 1993 HVIR Solid Waste Estimates.

0.7 Integrated Resource Management

In order to successfully achieve the goals set forth in this document, an integrated approach to solid waste management must be undertaken. Integrated resource management is the strategy of utilizing a multi-faceted approach to solving solid waste problems. This approach would include education, source reduction, recycling, composting, and a variety of other methods to reduce total waste volumes.

Several integrated waste management strategies have been proven to be successful in other communities. By modeling Hoopa's solid waste program after successful programs in communities with similar population densities and proximity to markets, Hoopa can achieve substantial reductions in the amount of waste the reservation must transport to distant landfills.

	Total waste	Total waste after 20% diversion	Total 30 gal cans after diversion	Total 1.5 cy bins after diversion
Year	1,220	975	44,571	780
Month	102	82	3,714	65
Week	23	18.8	857	15
Day	3.3	2.6	122	2.2

Figure 0.5: 1993 HVIR solid waste volume estimates after 20% waste reduction efforts are met.

1.0 Alternatives

Abbreviations

HTM = Hupa Tribal Member
US EPA = United States Environmental Protection Agency
ft^2 = Square Feet
y^3 = Cubic Yard

The Tribe has been notified by the U.S. Environmental Protection Agency that Hoopa's dump is not in compliance with federal standards. The dump is scheduled to close by late summer 1997. The Tribal Environmental Protection Agency and Public Utilities District have prepared a Solid Waste Management Plan that proposes four different alternatives for the future management of Hoopa's garbage. Each alternative must satisfy the management objectives of the solid waste management plan.

Although managing solid waste is very expensive, every effort will be made to reduce costs to the Tribal Membership and the community. User fees have been developed for each alternative. The Sugar Bowl Transfer Station currently charges $2.30 per can and Tom's Trash charges $3.30/week for collection of one 30-gallon cans of garbage.

The operating costs of a solid waste management system are lowered when waste is either reused, recycled or not placed into the final disposal site. Reusing, recycling and waste reduction are all forms of waste diversion**.** Four different diversion levels have been examined in alternative one. Though not examined, these diversion levels could also be implemented in alternatives two and three. Once an alternative has been selected, an implementation report shall be prepared. This report will provide the details necessary to implement the Tribe's new solid waste management plan.

A user fee is the cost an individual must pay to utilize the waste management system. User fees for all alternatives have been calculated to cover the expenses associated with each alternative at various levels of service. Figure 1 is a detailed comparison of the alternatives likelihood of success, jobs created, tribal government operating expenses, minimum user fee required to break even, and net revenue at $3.30 per household. The only ways to lower the individual household user fees are as follows:

1. Reduce the total tons of waste generated on the Reservation.
2. Reduce the tipping fee at landfill.
3. Reduce trucking costs to landfill.
4. Increase the number of customers utilizing the waste management service.

5. Initiate a subsidy to individual households.

The landfill closure report shall have three phases. Phase 1 will include a detailed topographic site map, waste characterization, waste pit soil profiles, depth of waste, area of waste, and the development of cost estimates for the following seven alternatives (appendix H):

1. Cover Landfill With High Density Polyethylene Membrane
2. Cover Landfill With Imported Clay
3. Cover Landfill With On-site Soils
4. Cover Landfill With On-site Soils Mixed with Bentonite
5. Cover Landfill With Manufactured Clay
6. Clean Close Landfill By Removing The Entire Two Acres Of Landfill
7. Clean Close Landfill By Removing Contaminated Soil Only

Phase two Will include the development of the construction plans, a request for bids, and a selection of a contractor for the alternative selected by the Tribal Council. Phase three will be the construction of the selected landfill closure alternative.

Alternative One
Local Transfer Station With Small Compaction System

1.1 Introduction

This alternative is modified from alternative three of the 1994 Draft Solid Waste Management Plan. Alternative one proposes the construction of a small Compaction type solid waste transfer station on either Lot 20 Agency Field or the proposed Cal-Pac Industrial Park.

Lot 20 Agency Field has been set aside by the Tribal Council for potential development of a transfer station(Figure 1.0 and appendix A). This site is suitable for the following reasons:

1. It is located on dump road, away from houses.
2. Tribal members currently drive past Lot 20 when disposing of their garbage at the dump.
3. Central location.
4. Relatively flat terrace.
5. Access road is in place.

The former mill site of Cal-Pac is also well suited to development of a transfer station for the following reasons:

1. A graded and mostly paved surface exists at this site, decreasing initial construction costs.
2. The site has a history of industrial use.
3. The area is removed from residential development.
4. The area is zoned commercial/industrial.
5. A scale is in place and needs only to be refurbished.
6. A transfer station will provide a permanent tenant to the site.

1.2 Construction Costs

Lot 20 Agency Field
Total construction costs are composed of site development costs and equipment costs. The site development cost for this alternative on Lot 20 Agency Field is $507,600 (Figure 1.1). Equipment costs total $314,691 (Figure 1.2). The total construction cost for a home collection/recycling center on Lot 20 Agency Field is $822,291.

Insert Map

Figure 1.1: Initial site development cost estimates for Lot 20 Agency Field.

	Quantity	Total $
Architectural and Engineering		20,000
Access Road improvement		70,000
Excavating and grading		10,000
Gravel fill	173 y^3	3,500
Concrete (4-in thick)	17,500 ft^2	87,500
Pavement	35,000 ft^2	75,000
Building	10,000 ft^2	110,000
Electrical installation		15,000
Water and sewer		11,000
Phone hookup		9,000
Fencing	500 ln ft	12,000
Contingency (20% of development)		84,600
Total		**$507,600**

Figure 1.3: Initial site development cost estimates for the transfer/recycling station site development at Cal-Pac.

	Quantity	Total $
Building		110,000
Concrete ramp	2,400 ft^2	20,000
Electrical installation		5,000
Water and sewer		11,000
Phone hookup		1,000
Fencing	500 ln ft	12,000
Excavating and Grading		10,000
Access Road Improvement		10,000
Contingency (20% of development)		10,400
Total site development		**189,400**
Total equipment cost		**314,691**
Total Construction Cost		**504,091**

Figure 1.2 Total construction cost estimates, Lot 20, Agency Field.

Equipment	Unit	Home Collection/ Recycling Total
Office Equipment		5,000
Scale		24,500
Stationary Compactor (w/Hopper)	1	39,360
40 c.y. Compaction container	3	18,000
40 c.y. bins w/ covers	2	11,906
1.5 c.y. commercial refuse bins	40	14,960
6 c.y. rear-loading refuse truck (w/chasis)	1	60,000
16 c.y. rear-loading refuse truck	1	75,000
High density bailer	1	10,000
Bander	1	270
Glass crusher	1	9,500
Aluminum can flattener	1	9,500
Recycling blower/loader	1	5,250
Yard debris chipper	1	5,250
4,000 lbs. scale	1	1,050
Fork Lift (w/attachments)	1	19,000
Pallets	15	790
Mobile recycling containers	6	3,150
Crushed glass container	15	1,575
Aluminum can container	4	630
Total Equipment Cost		$314,691
Total Site Development		$507,600
Total Construction Cost		$822,291

Cal-Pac Industrial Site

Site development costs total $189,400 for a transfer station at Cal-Pac (figure 1.3). Equipment costs for a transfer station located at Cal- Pac total $314,691 (figure 1.2). The total costs for constructing a home collection service/recycling center at Cal-Pac is $504,091. Architecture and Engineering costs should be included and total approximately $20,000.

1.3 Disposal Costs

Disposal and Hauling Costs

Regardless of how much diversion takes place, a transfer station with three 40 cubic yard containers, and a compactor will be required to economically transfer Hoopa's waste. Because more waste can be shipped to a landfill when it is compacted than uncompacted a compaction system is essential to reduce hauling costs. Each Compaction container can hold approximately 7.5 tons of compacted waste compared to 4.75 tons of uncompacted waste.

Compacted waste is less expensive to haul than uncompacted waste because almost one-and-a-half as much waste can be hauled per trip, cutting hauling costs nearly in half. The following bulky items will be required to be disposed of in 40 yard open top containers: white goods (4.4 tons/year), bulky waste (3.85 tons/year), and construction debris (7.69 tons/year).

Two landfill sites have been identified as potential disposal locations for the solid waste generated on the Reservation. These sites are the Cummings Road Landfill near Eureka, CA (Eureka), and the Anderson landfill near Redding, CA (Anderson).

The Eureka landfill charges $69.00/ton to dispose of waste (figure 1.5). The Eureka landfill was eliminated from this alternative because it could potentially close by Fall 1997. Following closure, the County plans to send waste by rail to Napa County where it will join another train and then be hauled to a landfill in Washington State. This new plan will likely increase tipping fees in Eureka to $85.00/ton (Ms. Ilene Poindexter, Solid Waste Engineer, Humboldt County Department of Public Works). Hauling costs are $420/trip when hauling compacted large tonnage waste from Hoopa to the Eureka landfill.

Anderson Landfill charges $26.61/ton to dispose of waste compared to $69.00/ton at Eureka. Hauling compacted waste from Hoopa to the Anderson landfill costs approximately $600/trip compared to $420/trip to haul to Eureka. The Anderson landfill has a life-expectancy of 75 years. At current prices, the Tribe would save approximately $37,000 annually at 0% diversion levels, if waste were hauled to and disposed of at the Anderson landfill rather than the Eureka landfill.

A truck will haul two 40 yard containers per trip to the disposal site: one container on the truck and one on the trailer. When two containers are full, a contractor will haul both containers at once to the Anderson Landfill. Having three Compaction containers will allow one container to remain on site while the other two containers are being transported. Estimates conclude that with no recycling, a Figure 1.5. Hauling and disposal costs using a compactor for Anderson Landfill at different solid waste recycling levels.

Compaction container will be filled every two days, and five open top containers will be filled per year. At Hoopa's projected solid waste volumes one trip to the disposal site will occur every five days.

Diversion	Total Waste (tons)	Number of Trips at 15 tons/trip	Anderson Disposal Fee ($26.61/ton)	Anderson Hauling Fee (@ 600/trip)	Total Disposal and Hauling Cost ($)
0%	1,220	82	32,464	49,200	81,664
10%	1,098	73	29,218	43,800	73,618
20%	960	64	25,546	38,400	64,971
40%	732	49	19,479	29,400	48,879

Waste Generation and Collection Capacities

Because of the small population, remote location, long distance between households, and small overall volume of waste, a 13 cubic yard rear loading waste collection vehicle, and a smaller, 6 cubic yard side-loading model will best fit the Reservation's needs if home collection service is provided to all households. The smaller 6 cubic yard vehicle would only be required if pick-up service were limited to Hoopa Tribal Member (HTM) households. Households with large bulky items and residents or businesses which choose not to utilize the collection service must transport their own waste to the proposed Hoopa transfer station or to another approved disposal facility.

1.4 Labor, Operation, and Maintenance Costs

Labor Costs

Home Collection/Recycling

The station will be operated by one attendant/manager and two refuse truck operators. A Tribal conservation officer will enforce the litter abatement ordinance equivalent to one quarter time officer's salary ($9,000). The attendant/manager's responsibilities will include monitoring waste input, operating the compactor and any recycling equipment. This position will also collect user fees, maintain the transfer station site, and perform administrative duties. In addition the attendant/manager will assist refuse operators when they are ill or on vacation. The attendant/manager will receive $11 per hour with 34.5% fringe ($30,774 per year). The attendant will receive $9 per hour with 34.5% fringe (25,179 per year).

The refuse operator(s) will operate the transfer station's home collection service and assist the attendant/manager as required. Under home collection service, one operator will drive the 6 cubic yard truck and the other the 13 cubic yard truck (figure 1.6). It has been estimated that one person can collect approximately 125 households and 5 commercial bins per day.

Figure 1.6: Number of full time employees and labor costs required to operate the household refuse collection service.

Households	Collection days	# Employees	Annual labor costs
All 860	7	3	90,132
(90%) 775	7	3	90,132
All 671 NA	6	3	90,132
All 344 TM	3	2	64,953

Operation and Maintenance Costs

Figure 1.7. Operation and Maintenance costs for each sub-alternative.

O&M Items	Home Collection/ Recycling Center
Insurance	7,200
Building and Equipment Maintenance	4,000
Office	500
Accounting	1,400
Utilities	3,600
Taxes, licenses, fees	1,200
Shop Supplies	1,700
Equipment purchase	1,200
Equipment replacement cost	42,500
Miscellaneous	1,000
Gasoline/propane	20,000
Total	84,300

1.5 Total Disposal, Labor and O&M Costs (Yearly O&M)

Annual operation and maintenance costs for the transfer station have been estimated from operation and maintenance (O&M) costs at the Redway, California Transfer Station and are listed in Figure 1.7. Total O&M costs home collection service/recycling center is $84,300.

The total operation and maintenance costs for a transfer station with home collection/recycling services is approximately $256,100 if hauling to the Anderson Landfill. It is approximately $37,000 less expensive to use the Anderson landfill than the Eureka landfill each year at the 0.0% diversion level. Figure 1.10 contains the total disposal, labor and O&M costs associated with each diversion level.

Figure 1.10 contains the total disposal, labor and O&M costs for the home collection/recycling sub-alternative associated with each diversion level.

Anderson Landfill	Disposal & Hauling $/year	Attendants and Police Wages $/year	Operation & Maintenance $/year	Total Expenses
No Diversion	81,664	90,132	84,300	256,096
10%	73,618	90,132	84,300	248,050
20%	64,971	90,132	84,300	239,403
40%	48,879	64,953	84,300	198,131

1.6 User Fee

A general description of user fees, a table of revenue generated under various fee options and a discussion of fee assessment techniques is contained in Appendix A.

The final assessment used to determine the most appropriate user fee was to compare the total expense associated with each sub-alternative against the minimum user fee required to produce the necessary income levels (Appendix A). Attaining the Tribe's goal of 20% waste diversion is unlikely to occur during the first year of operations due to budget constraints. Therefore, the most appropriate user fee is the one that will cover the costs of operating the transfer station at 0.0% diversion.

The Tribe currently allocates approximately $80,000 per year to operate and maintain the Supply Creek Dump. The money is used to pay two attendants wages, haul non-burnable materials, and maintain the access road and landfill site. If this $80,000 is continued to be contributed by the Tribe for solid waste management services to Tribal households, approximately $4.50 per week could be used to pay for Tribal members household collection fees.

a. Per Bag Rate

The Tribe could charge no more than $2.50 per bag of trash, the current rate charged at the Sugar Bowl transfer station. It is likely more illegal dumping will occur if a higher user fee is charged. Figure 1.11 contains the estimated revenue generated from a charge per bag rate. This method indicates that if all households utilized the transfer station approximately $140,000 would be generated. Therefore, this method of charging user fees is not economically feasible without alternative financial assistance.

b. Per Household Fee

An analysis of the estimated revenue generated from home collection/recycling service user fees at 0.0% diversion using the Anderson landfill as a disposal site indicates:

1. 775 Households would need to be charged a weekly user fee of 5.85.

2. Servicing only Tribal households is not economically feasible at any diversion level examined.

Table 1.12 indicates the minimum user fee required to meet the total expense of managing solid waste at various diversion levels. An absence of a user fee indicates that a user fee higher than $5.85 must be charged.

ANDERSON LANDFILL

Diversion	Total Expenses	All Household	775 Household	All NA (671) Household	All HTM (344) Household
0%	256,096	5.36	5.85	---	---
10%	248,050	5.36	5.36		---
20%	239,403	5.00	5.36	5.85	---
40%	198,131	4.00	4.50	4.50	---

Alternative Two
Home Collection Service Utilizing the Current Humboldt County "Sugar Bowl" Transfer Station

2.1 Introduction

Alternative 2 does not require the construction of a solid waste transfer station, but will utilize the current Humboldt County transfer station at the "Sugar Bowl." Alternative two examines the total expense and user fees required to operate home collection as either:

1. Operated by HVPUD

   Under this option, the County could charge the Tribe for each ton of waste hauled to the Sugar Bowl. The Tribe would need to weigh each truck prior to disposing at the transfer station. Total operation costs and estimated user fees at the current $117/ton disposal rate and the potential $137/ton rate have been calculated.

2. HVPUD franchise's with private refuse collectors

   Under this option, the Tribe could franchise home collection service to private refuse collectors. Operating as a franchise with private refuse collectors will only provide service for the length of the franchise contract with the County, which is due to end in 1997. However, it is likely that this franchise or a similar franchise will be offered.

Both options include collection service to all 15 current commercial 1.5 yard bin users and all 344 HTM households. Home collection service could be offered to all households on the Reservation. The collection service will be managed by the Hoopa Valley Public Utilities District (HVPUD). Households with bulky items will be required to transport the bulky waste to the Sugar Bowl Transfer station. HVPUD may franchise the collection service to HVDE, Private refuse collectors or another solid waste collection service.

Operation, maintenance, hauling, and disposal of the transfer station's waste containers and recyclable materials will be the responsibility of Humboldt County.

A residential and commercial refuse collection service could be offered to all interested parties on the Reservation. As the Tribe would have the exclusive right to waste collection on the HVIR, the collection service will also be offered to all 15 current commercial waste generators.

It is assumed that one 13y^3 rear loading waste collection vehicle could service all 344 HTM households and commercial users. If more than 600 households other than HTM households are to utilize the collection service, an additional 6y^3 yard truck will be required to service the Reservation needs.

It has been estimated that one person using a collection vehicle can collect approximately 125 households and 5 commercial bins per day. Since household waste must be picked up every week and the pickup schedule must be strictly followed, both collection service options will require at least one full time refuse collector. A list of all costs and user fees associated with this alternative is listed in Appendix E.

2.2 Construction Costs

2a. HVPUD or HVDE

As no transfer station or recycling facility will be constructed, equipment costs are substantially reduced from alternative one. Figure 2.1 outlines the equipment requirements and associated costs for the Tribal Entity option.

No construction costs are associated with this option as the franchise holder would provide all equipment. Equipment costs would be limited to $9,000 for the purchase of mobile recycling containers. Recycling opportunities will be available at the shopping center and Youth Center. Strict enforcement of the proposed Solid Waste Management Ordinance will be required to reduce illegal dumping of household trash, appliances, and hazardous waste. If the Tribe were to select this alternative the County would likely require all the waste management operator to comply with California source reduction requirements.

Figure 2.1: Equipment requirements and associated costs for each of the four options associated with this sub-alternative.

	All (860)	**(775) 90% reduction**	**All NA (671)**	**All HTM (344)**
Recycling	9,000	9,000	9,000	9,000
Scale	24,500	24,500	24,500	24,500
13y^3 truck	75,000	75,000	75,000	75,000
6y^3 truck	60,000	60,000	60,000	none
1.5 y^3 bins	20,000	20,000	20,000	20,000

Total	**188 500**	**188 500**	**188 500**	**128,500**

2b. Franchise Option

2.3 Disposal Costs

The largest problem associated with assessing fees for solid waste is that waste is collected by volume not weight. A 30 gallon can of waste can weigh anywhere from 10 to 75 pounds depending upon the types and density of materials. Humboldt County has established fee standards for accepting waste which solid waste franchises must not exceed. The County sets the user fee for waste hauling franchises. Currently, Tom's Trash charges 3.60/week to service one 32 gallon garbage can, and $5.85/week to service two 32 gallon garbage cans. Although the Tribe is not required to abide by these fee standards, they do provide a standard which would make fees uniform throughout the County.

Disposal costs at the Sugar Bowl are currently $117/ton or $3.60/can and are expected to increase to $137/ton or $4.15/can when the landfill closes. Disposal costs for the tribal entity option are listed in Figure 2.2. Disposal costs for the franchise option are listed in Figure 2.3.

Figure 2.2 Disposal costs for alternative 2a. (HVPUD or HVDE)

Number of participating households	**Disposal Cost @ $117/ton (Current Rate)**	**Disposal Cost @ $137/ton (Est. 1998 Rate)**
860	167,140	167,140
775	151,839	151,839
675	133,838	133,838
344	74,2540	49,566

Figure 2.3 Disposal Cost for alternative 2b. (Franchise Option)

Number of participating households	**Disposal Cost @ $3.60/can (Current Rate)**	**Disposal Cost @ $4.15/can (Est. 1998 Rate)**
860	200,556	230,639
775	180,734	207,844
675	157,413	181,025

344	80,222	92,256

2.4 Labor, Operation, and Maintenance Costs

2a. HVPUD or HVDE

As this alternative will not require the operation of a transfer station the collection service will be operated by one or two refuse truck operators depending on the number of households serviced, and at least one part-time manager/operator. The refuse truck operators will operate the programs home collection service and assist the manager/operator as required. One operator will drive the 6 yard truck and the other the 13 yard vehicle. The cost estimate for the refuse truck operators will be $9 per hour with 34.5% fringe ($25,179 per year).

The manager/operator's responsibilities will include monitoring waste input, collecting user fees, maintaining the refuse trucks, and assisting refuse collectors when they are sick or on vacation. The attendant/manager will receive $11 per hour with 34.5% fringe ($30,774 per year). The cost of enforcing the tribal litter abatement ordinance is equivalent to approximately one quarter of a Tribal policeman's salary or $9,000. Figure 2.4 contains the labor costs associated with the Tribal Entity Option.

Figure 2.4: Number of full time employees and labor costs required to operate the Tribal entity option. NA = Native American, HTM = Hupa Tribal Member

Households	Police @ $36,000/ yr	Refuse Collectors @ $25,179/yr	Attendant/ Manager @ $30,774/yr	Personnel costs per year
All (860)	0.25	2	1	90,132
90% (775)	0.25	2	1	90,132
All NA (671)	0.25	2	0.5	74,745
All 344 HTM	0.25	1	0.5	49,563

Annual operation and maintenance costs for the transfer station have been have been extrapolated from operation and maintenance costs at the Redway, California Transfer Station (figure 2.5). Operation and maintenance costs are estimated to be $50,800 with service to all 860, 775 and 671 households on the Reservation, and $46,050 for service to all HTMs Households.

Figure 2.5: Estimated operation and maintenance costs for the Hoopa Valley Home Collection Service. (HH = household)

	All 860 HH	775 HH	All Native American HH	All HTMs HH
Education	9,000	9,000	9,000	9,000
Insurance	2,500	2,500	2,500	1,250
Equipment	2,000	2,000	2,000	1,000
Office Supplies	500	500	500	500
Accounting	1,400	1,400	1,400	1,400
Gasoline	20,000	20,000	20,000	10,000
Utilities	500	500	500	500
Telephone	1,200	1,200	1,200	1,200
License/fees	1,200	1,200	1,200	800
Depreciation	11,500	11,500	11,500	7,000
Misc.	1,000	1,000	1,000	1,000
Total	50,800	50,800	50,800	46,050

2b. Franchise Option

Only a small amount of labor will be required to oversee the execution of the franchise agreement. This labor is considered "in-kind". One quarter-time conservation officer will be employed at a cost of $9,000/year. Operation and maintenance costs total $19,000 for the franchise option and are listed in figure 2.6.

Figure 2.6. Operation and maintenance costs for the Franchise Option

	860 HH	775 HH	675 HH	344 HH
Recycling/ education	9,000	9,000	9,000	9,000
Depreciation of Equipment	10,000	10,000	10,000	10,000
Total	**19,000**	**19,000**	**19,000**	**19,000**

2.5 Total Disposal, Labor and O&M Costs (Yearly O&M Costs)

2a. HVPUD or HVDE

If the Tribe were charged a weight-based fee of $117/ton to use the Sugar Bowl Transfer Station, the total O&M costs to service all 860 households would cost $284,000, to service all 775, 675 and 344 households would cost $2671,000, $240,000 and $159,000 respectively (Figure 2.7).

Figure 2.7. Total expense of the operation and estimated user fees at the current $117/ton rate and the future $137/ton rate.

Number of Participating Households	Total Expense @ $117/ton	User Fee @ $117/ton	Total Expense @$137/ton (1998)	User Fee @ $137/ton
860	283,672	5.87	308,072	6.42
775	270,605	6.19	292,771	6.74
675	239,844	6.23	259,383	6.79
344	159,030	7.72	169,870	8.32

2b. Franchise Option

If the tribe were charged $3.60/can, the yearly O&M to 860 households would be $229,000. The total cost to 775,675 and 344 households would be $209,000, $186,000 and $109,000 respectively Figure 2.8).

Figure 2.8. Total number of households services, and total cost of the franchise at $3.60/can and 4.15/can.

Total Number of Participating Households	Total Cost @ $3.60/can	Total Cost @ $4.15/can
860	228,556	258,639
775	208,734	235,844
675	185,413	209,025
344	108,222	120,256

2.6 User Fee

The final assessment used to determine the most appropriate user fee was to compare the total expenses associated with each option against the minimum user fee required to produce the necessary income levels to maintain home collection service. As there will be no recycling center on the reservation, the most appropriate user fee is the one that will cover the costs of operating the home collection service at the 0.0% diversion.

2a. HVPUD or HVDE

If waste were disposed at the Sugar Bowl Transfer Station at a rate of $117/ton then 800, 115, 675 and 344 households would have to pay user fees of $5.87, $6.19, $6.23 and $7.72 respectively, see figure 2.9.

Figure 2.9. User fees for HVPUD Option.

Number of Households participating	Total Expense @ $117/ton	User Fee @ $117/ton	Total Expense @ $137/ton	User Fee @ $137/ton
860	283,672	5.87	308,072	6.42
775	270,605	6.19	292,771	6.74
675	239,844	6.23	259,383	6.79
344	159,030	7.72	169,870	8.32

2B. Franchise Option

Under this option each household would pay $3.60/can for home collection and $2.30 for self haul until the landfill closes in 1998. Once the landfill closes, the user fee is expected to increase to $4.15/can for home collection and $2.85 for self haul until. This alternative requires no fee collection by the tribe, as the transfer station or home collection operators will collect the fees.

Alternative Three
HTMs use
the Sugar Bowl
Transfer Station

3.1 Introduction

Alternative three is a new alternative and was not outlined in the 1994 Draft Solid Waste Management Plan. Under alternative three, all households will continue to be required to haul their trash to the Sugar Bowl transfer station. No construction will be performed and home pickup service will be available through Private refuse collectors. Mobile recycling containers will be available at Ray's shopping center and/or the Youth Center. Operation, maintenance, and recycling at the Sugar Bowl transfer station will be handled by the County.

Jobs Created or Supported	Likelihood of Enforcing Liter Abatement Ordinance	User Fee
0.25	Low	$2.50/bag

3.2 Construction Costs

Mobile recycling units total $9,000.

3.3 Disposal costs

All households would be required to pay the $2.50 per bag rate at the transfer station, or contract with Private refuse collectors at a rate of $3.30/can or $5.85 for two cans.

A solid waste intake survey at the Supply Creek Landfill estimated that approximately 730 tons of solid waste was received during 1993 (figure 0.2). Although the Supply Creek Landfill is restricted to use by HTMs only, it is estimated that approximately 60% of Hoopa's population disposes 585 tons of waste at the landfill. Tribal entities dispose an additional 146 tons into the Supply Creek Landfill annually. An analysis of the results of the 1993 waste intake survey estimates that 730 tons of additional waste would be deposited at the Sugar Bowl transfer station.

The remaining 40% of the population (1,340 people), dispose of their waste at either the Sugar Bowl Transfer Station.

	Total Waste (tons)	Total 30 gal bags	Total 1.5 cy bins
year	730	37,800	---
month	61	3,150	---
week	15	787	---
day	2	113	---

Figure 0.2: 1993 Supply Creek Landfill Solid Waste Estimate of Additional Waste Deposited at the Sugar Bowl Transfer Station.

3.4 Labor, O&M Costs

The only labor cost associated with this alternative is the cost of enforcing the litter abatement ordinance through the Tribal police (approximately $9,000/year) in addition to $9,000 in-kind solid waste education (TEPA) and $9,000 in-kind recycling collection.

3.5 Total O&M (Yearly O&M)

The yearly operation and maintenance costs are composed solely of the above costs ($9,000/year).

3.6 User Fee

The largest problem with assessing fees for solid waste is that waste is collected by volume, not weight. One 30 gallon can of waste can weigh from 10 to 75 pounds, depending upon the types and densities of materials. Humboldt County has established fee standards for accepting waste volumes which solid waste franchises must not exceed. Currently, each person hauling waste to the Sugar Bowl Transfer Station must pay a $2.50 disposal fee per bag.

Insert figure 1

Appendix A

Tribal Council Resolution: Designation of Lot 20
Agency Field

Appendix B

User Fees

User Fee

The following goals must be met to ensure the successfully implementation of a user fee:

1. Ensure financial self-sufficiency.

2. Ensure that the cost of using the solid waste management system will be as low as possible per individual user.

3. Strictly enforce the Solid Waste Management Ordinance.

Figure B-1. Comparison of minimum user fee required to ensure financial self-sufficiency.

Alternative	House holds Served	Total Yearly Cost	Minimum User Fee (1 can/week)	Figure
1.Hoopa Transfer Station	860 775 675 344	256,096 248,050 239,403 198,131	5.26 5.63 6.22 9.90	A-1
2a.HVPUD-Home Collection ($117/ton)	860 775 675 344	274,672 261,605 230,844 150,030	5.67 5.97 5.98 7.21	A-2
2b.Franchise-Home Collection	860 775 675 344	211,960 203,248 193,000 128,276	3.60 3.60 3.60 3.60	A-3
3.Self-Haul	860 775 675 344	---- ---- ---- ----	2.50 2.50 2.50 2.50	----

The largest problem associated with assessing fees for solid waste is that waste is collected by volume not weight. Individuals and businesses pay by volume for home collection. However, waste disposal firms are charged by weight at landfills. A 30 gallon garbage can of waste can weigh anywhere from 10 to 75 pounds depending upon

the types and density of materials. Humboldt County has established fee standards for accepting waste volumes which solid waste franchises must not exceed.

Currently, Tom's Trash charges $3.60/week to service one 32 gallon garbage can, and $5.85/week to service two 32 gallon garbage cans.

Although the Tribe is not required to abide by these restrictions, they do provide a standard which would make fees uniform throughout the county.

Figure B-2. Disposal fee for 1-30 gallon garbage can in other franchises in the County.

City	Disposal Fee for 1-30 Gallon Can of Garbage
Arcata	$2.95
Eureka	$3.16
Fortuna	$3.66
Mckinleyville	$3.75
Hoopa/Willow Creek	$3.60

Both City Garbage of Eureka and Humboldt Sanitation in McKinleyville require a customer to have a 32 gallon garbage can with the address of the residence painted on the surface to receive home collection service. A similar requirement for home collection on the reservation should be required.

User Fee Collection

Three options exist for user fee collection:

1. Mail an individual bill to all households receiving home collection services.

2. Attach the home collection service bill to the water and utility bill that is currently issued by the Hoopa Valley Public Utilities District (PUD).

3. Assess a solid waste management tax on fee and/or trust lands.

4. Collecting a tipping fee at the proposed transfer station or home collection operators.

Fees from Alternatives 1, 2a, and 2b can be collected by the above described methods. Alternative 3 and 4 will require no fee collection by the Tribe, as the transfer station or home collection operators will collect the fees.

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Mailing solid waste bills to each household is unlikely to supply the revenue owed for home collection services due to the fact that HTM have never been required to pay for solid waste management services and no significant repercussions would result if the bill went unpaid. Attaching the solid waste bill to the PUD bill could only apply to the 775 homes serviced by PUD. This method of fee collection is likely to result in bill payment because other PUD services could be turned off if no payment were made on any portion of the bill.

Taxation is currently used by Trinity County to collect user fees for municipal solid waste management. This option also has the potential of charging two different rates to fee and trust lands. However, many HTM live on fee land and a disproportionately large tax rendered to fee lands could be burdensome to some HTM. A flat tax on all property appears to be the most equitable manner of collecting fees through taxation. Taxes to individual HTMs could be subsidized through a Tribal contribution. A table of estimated revenue from user fees is listed in figure A.1.

Figure A.1: User fee options and estimated revenue generated if 'X' number of households utilize the home pickup service; the remainder self haul and pay the $2.50 per bag disposal fee; and $21,000 is collected annually from commercial 1.5 yard bin customers. (HH = household)

	User Fee Collection Options					
	$1.00/ week	**$1.50/ week**	**$1.75/ week**	**2.00/ week**	**2.50/ week**	**3.00/ week**
Revenue Sources						
860 HH	44,720	67,080	78,260	89,440	111,800	134,160
Commercial Bins	21,000	21,000	21,000	21,000	21,000	21,000
Self-haul	0	0	0	0	0	0
Total	**65,720**	**88,080**	**99,260**	**110,440**	**132,800**	**155,160**
775 HH	40,300	60,450	70,525	80,600	100,750	120,900
Commercial Bins	21,000	21,000	21,000	21,000	21,000	21,000
Self-haul	4,420	6,630	7,735	9,260	11,050	11,050
Total	**65,720**	**88,080**	**99,260**	**110,860**	**132,800**	**152,950**
671 HH	34,892	52,338	61,061	69,784	87,230	104,676
Commercial Bins	21,000	21,000	21,000	21,000	21,000	21,000
Self-Haul	9,830	14,742	17,200	19,660	24,570	24,570
Total	**65,720**	**88,080**	**99,260**	**110,440**	**132,800**	**150,240**
334 HH	17,370	26,050	30,390	34,740	43,420	52,100
Commercial Bins	21,000	21,000	21,000	21,000	21,000	21,000
Self-Haul	27,350	41,030	47,870	54,700	68,380	82,060
Total	**65,720**	**88,030**	**99,260**	**110,440**	**132,800**	**132,800**

Table A.1 continued.

	User Fee Collection Options						
Revenue Sources	**3.30/ week**	**3.60/ week**	**4.00/ week**	**4.50/ week**	**5.00/ week**	**5.36/ week**	**5.85/ week**
860 HH	147,576	160,992	178,880	201,240	223,600	239,690	261,612
Commercial Bins	21,000	21,000	21,000	21,000	21,000	21,000	21,000
Self-haul	0	0	0	0	0	0	0
Total	**168,576**	**177,520**	**199,880**	**222,240**	**244,600**	**260,690**	**282,612**
775 HH	132,990	145,080	161,200	181,350	201,500	216,008	235,755
Commercial Bins	21,000	21,000	21,000	21,000	21,000	21,000	21,000
Self-haul	11,050	11,050	11,050	11,050	11,050	11,050	11,050
Total	**165,040**	**177,130**	**193,250**	**213,400**	**233,550**	**248,058**	**267,805**
671 HH	115,144	125,611	139,568	157,014	174,460	187,021	204,118
Commercial Bins	21,000	21,000	21,000	21,000	21,000	21,000	21,000
Self-haul	24,570	24,570	24,570	24,570	24,570	24,570	24,570
Total	**160,714**	**171,181**	**185,138**	**202,584**	**220,030**	**232,591**	**249,688**
344 HH	59,030	64,396	71,522	80,496	89,440	95,880	104,644
Commercial Bins	21,000	21,000	21,000	21,000	21,000	21,000	21,000
Self-haul	67,080	67,080	67,080	67,080	67,080	67,080	67,080
Total	**147,110**	**152,476**	**159,632**	**168,576**	**177,520**	**183,960**	**192,724**

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Appendix C

Integrated Solid Waste Management

Integrated Solid Waste Management

In order to successfully achieve the goals set forth in this document, an integrated approach to solid waste management must be undertaken. Integrated solid waste management is the strategy of utilizing a multi-faceted approach to solving solid waste problems. This approach would include education, source reduction, recycling, composting, and a variety of other methods to reduce total waste volumes.

Several integrated solid waste management strategies have been proven to be successful in other communities. By modeling Hoopa's solid waste program after successful programs in communities with similar population densities and proximity to markets, Hoopa can achieve substantial reductions in the amount of waste the reservation must transport to distant landfills.

	Total waste	**Total waste after 20% diversion**	**Total 30 gal cans after diversion**	**Total 1.5 cy bins after diversion**
Year	1,220	975	44,571	780
Month	102	82	3,714	65
Week	23	18.8	857	15
Day	3.3	2.6	122	2.2

Figure 0.5: 1996 HVIR solid waste volume estimates after 20% waste reduction efforts are met.

Education

The importance of public education must not be underestimated. If public education is not used to inform residents of both how and why to reduce waste output, efforts are more likely to fail. All major waste generators (i.e., youth, residents, business, industry, and government institutions) must be informed of how their waste contributes to the solid waste problems facing the reservation. This “bottom up” system of solid waste management will more accurately reflect the communities solid waste concerns. Such a system encourages grass roots organizations and entrepreneurs to shape solid waste problems into environmental and economic solutions.

The following are educational activities which if done properly have the potential to change the communities opinion and attitude about solid waste.

Annual Source Reduction and Recycling Week: The establishment of an annual source reduction and recycling week will provide an excellent outlet for special solid waste events. An annual solid waste newsletter should be distributed to announce upcoming special events. Special media attention and activities should be focusing on the reservations solid waste reduction efforts. The activities should focus on specific elements of the reservations solid waste management which have exceeded expectations or are in need of support. Grass roots groups and organizations such as; schools, businesses, religious groups, or clubs should be encouraged to sponsor events such as litter collection along streams and roadways, recycling collection to support special causes, or composting or source reduction workshops.

Open-House day - An open house day at the transfer/recycling station for the general public and school will help to educate the public about the reservations integrated waste management efforts.

Radio broadcasts - Periodic 15 minute question and answer programs and 30 second public service announcements should be planned to discuss how, when, and why the upcoming solid waste management changes will affect Hoopa residents.

Mobile display - A source reduction and/recycling mobile display should be designed to provide practical information and examples of how residents can reduce the amount of waste they send to the landfill. The display should also inform residents how they can volunteer or get further information on solid waste issues.

Workshops - Workshops should be organized to provide hands on experience to residents. Workshops should target topics which have a high probability of success and will provide valuable information on how to reduce waste at the individual level.

Source Reduction

Source reduction is an important component of a solid waste management plan. Often misunderstood "source reduction" is simply reducing the net amount of materials and products entering the waste stream. Reduction at the source differs from other solid waste management options because it does not involve the recovery of products from the waste stream. The basic approach to source reduction is product reuse, production maximization, and decreased consumption.

The first step in organizing a successful source reduction program is to design and implement an educational program. Educational materials need to be made available to households and commercial operations that provide ideas for volume reduction, product reuse, and recycling. Source reduction ideas should be delivered on a variety of mediums including brochures, radio public service announcements, shopping bag logos, posters, and newsprint articles.

Education about source reduction includes a wide variety of activities including reusing grocery bags, donating materials to thrift stores or selling items at garage sales, composting food scraps and yard waste at home, carrying your own coffee cup wherever you drink coffee, buying clothing furniture, toys and appliances which can be repaired. The following source reduction activities are simple to initiate and have the potential to save money and reduce waste output.

1. Use the back side of papers before they are recycled and copy on both sides of paper.
2. Support local used/rebuilt appliance, clothing, and auto parts businesses.
3. Encourage local grocery stores to stock more bulk food items.
4. Encourage shoppers to bring their own shopping bags to market.
5. Encourage local restaurants and grocery stores to donate food scraps to livestock ranchers.
6. Sponsor backyard composting program.
7. Encourage the reuse of construction materials.
8. Use cloth towels in place of paper towels.
9. Encourage the use of products made from recycled materials.

As materials are reduced before they reach the transfer station, monitoring the reduction is difficult. However, it can be assumed that as residents become more aware of the composition of their waste, they will use their consumer buying power to selectively reduce unnecessary waste.

Recycling

Recycling is the process of collecting, sorting, reusing, and diverting materials that would otherwise become solid waste. By returning materials to the solid waste base, the need for virgin raw materials can be greatly reduced.

It has been estimated that only 2% of the households on the reservation currently recycle glass, aluminum cans, and/or plastic. Residents who do recycle, currently transport their recyclable materials to either the Sugar Bowl Transfer Station or a recycling center located in one of the nearby communities. The nearest recycling center is approximately 60 miles from the Tribe's proposed recycling center site. As a result of the large distance from markets and lack of recycling containers, few residents, businesses, schools, or government facilities currently recycle.

Operating a successful collection, processing, and marketing program for recyclable materials in northeastern Humboldt County will be difficult. The area has a small population density and is far from potential markets. However, if the Tribe models it's recycling program after successful programs in communities with similar population densities and proximity to markets, substantial reductions in the amount of waste transported to distant waste disposal facilities will be achieved.

The following recycling collection alternatives should be implemented into the Tribe's solid waste management system:

- Recycling center at transfer station.
- Mobile drop off container.
- Recycling Containers at Klamath-Trinity School.
- Recycling program for Tribal Departments.
- Used household and clothing items donated to Thrift Store.

A recycling center could be housed at the transfer station. Only a bailer, glass crusher, aluminum can crusher, scale, forklift, and containers will be required. The recycling center would accept recyclable materials to reduce the overall waste disposal volumes and to offset waste disposal costs.

The recycling center would be open to the public on the same days as the transfer station. An attendant would pay the current price for select recyclable materials (aluminum cans, glass, and #1 and #2 PETE plastic). The attendant would accept, but not pay, for select paper, glass, metal, and PETE plastic materials. Bins will be placed outside the transfer station to collect donated recyclable materials. When sufficient quantities of recyclable are collected and processed a local trucking company would be contracted to haul materials to markets.

It is estimated that the recycling center will divert approximately 29 tons of targeted materials and 187 tons of compostable and non-targeted materials from the general waste stream. These materials (29 tons plus 187 tons), together with 28 tons of recyclable materials collected from the schools, tribal departments, and the mobile container site total 244 tons of recyclable materials annually to be processed at the recycling center/transfer station.

Mobile Drop-off Container and Tribal Office Recycling Program

A mobile recycling container site, located at the Hoopa Valley Shopping Center, has the potential to serve approximately 4,113 people: 3,346 on the HVIR and 767 from the Orleans area. Currently, there is no mobile recycling container site in Hoopa or Orleans.

The mobile drop-off container site will require the purchase of three 1.5 c.y. bins. These bins will be modified by separating each bin into two compartments, attaching locking devices, cutting drop slots, and decorating bins with recycling logos. The recycled materials will be collected by a local non-profit group which will maintain the site and receive all income derived from the recyclable materials collected at the site.

In addition to the mobile recycling container a recycling program is also planned for the thirty Tribal Departments (employing 385 workers) operated under the Hoopa Valley Tribal Council. The tribal recycling program will require the purchase of ten 30 gallon aluminum/glass receptacles, twenty large paper receptacles, and sixty smaller receptacles. The aluminum/glass receptacles will be placed near soda machines and break areas. The large paper receptacles will be placed by office copy machines or computer printers. The smaller desk size receptacles will be collected by the custodial staff and deposited into the larger paper receptacles.

The materials collected at the mobile container site will include clear, green, and brown glass, CRV plastic bottles, aluminum cans, and newspaper. The Hoopa Valley Tribal Departments will be targeted for high grade paper, cardboard, aluminum cans, and CRV glass. Only the Ray's Food Place Market (cardboard) and the Trinity Valley School (aluminum cans), currently recycle. The new recycling program will target an audience which has historically never recycled.

Community interest and needs will be identified through a reservation wide survey. The survey will include 12 solid waste questions. Five of these questions will concern source reduction and recycling. Information about how, where, why, and what types of materials are accepted at the container sites will be forthcoming through radio public service announcements, posters, brochures, bin decorations, and newspaper articles.

As the Tribe operates its own radio station, public service announcements and talk shows will continue to be a major component of the recycling program. Posters will be ordered from the US Environmental Protection Agency, Integrated Waste Management Board, and the CA Department of Conservation. Sample brochures have been received from the EPA and the Humboldt County Department of Health and Human Services. These brochures will be reviewed and a local brochure will be developed. A contest will be planned for local students to design decorations for the mobile recycling bins. Contestants with the best designs will be contracted to decorate the bins with chosen art

work. Information will also be relayed through the tribal newsletter and the local area newspaper.

Participation in the recycling project by residents and tribal staff is projected to be high. Several individuals in the tribal entities currently recycle, but no coordinated effort has been developed. Recycling efforts are expected to increase with the implementation of the Tribe's recycling program.

The Tribal "Home Improvement" program staff have operated the current tribal entity waste collection system for several years. The program manager has agreed to collect separated recyclable materials from departments and mobile containers. Recycled materials will be taken to the recycling center.

Recycling Containers at Klamath-Trinity School

The Klamath-Trinity Elementary and High Schools are located approximately 15 miles north of Willow Creek on the reservation. The recycling collection program at the school will serve a total of 950 people, this includes 856 students (K-12) and 94 faculty/staff members.

Klamath-Trinity students, like all students in America, dispose of large quantities of paper, aluminum cans, and glass. By targeting these materials, the school plans to divert approximately 5,200 pounds from it's waste stream and collect $865 from recyclable materials annually. The school in Hoopa currently recycles aluminum cans. The school's recycling program consists of four 30 gallon trash cans scattered throughout the entire 10 acre school complex. The cans are collected by the custodial staff and transported 60 miles to the coast for resale.

Expanding the school's recycling program will require the purchase of eleven 32 gallon aluminum/glass receptacles, five large paper receptacles, and twenty-one smaller receptacles. The aluminum/glass receptacles will be placed near soda machines and break areas. The large paper receptacles will be placed by office copy machines or computer printers. The smaller desk size receptacles will be collected by the custodial staff and deposited into the larger paper receptacle. High grade paper recycling containers will be located in computer rooms and offices. These locations generate approximately 2,000 lbs of high grade paper yearly. Cardboard collection will take place in the receiving department of the schools cafeteria. The cafeteria currently disposes approximately 1,500 lbs of cardboard annually.

The materials collected at the school will include CRV glass, aluminum cans, cardboard, and high grade paper. The school currently diverts approximately 400 pounds of aluminum cans from the their waste stream. With 10 additional recycling containers

and by targeting glass and aluminum cans, 1,200 pounds of cans and 500 lbs of glass can be diverted and recycled from the school's waste stream. By diverting and selling 5200 lbs of recyclable materials, the school will save $448 from the schools current yearly waste disposal costs and produce an income of $865 from recycled cans and bottles. In addition, diverting waste will result in a reduction in landfill space, increased scholarship funds, and waste collection savings (figure 0.6).

	Pounds diverted	**Diversion savings**	**Income generated**	**Total savings**
CRV glass	500	$38	$25	$63
aluminum cans	1,200	$90	$840	$930
cardboard	1,500	$113	---	$113
HG paper	2,000	$150	---	$150
Total	5,200	$391	$865	$1,256

Figure 0.6: Estimated revenues from materials diverted from the schools waste stream. Recycling program promotion will be accomplished through classroom projects, professional posters and by word of mouth. A poster contest will be initiated for all students in the school. One poster will be chosen from each of the three class categories: K-3, 4-7, and 8-12. The contestants whose posters were chosen will receive a $25 dollar cash award. Posters will be selected by a group of faculty/staff members familiar with the schools recycling project. The best three posters from each class will be placed near collection containers to promote participation.

Participation in the school's recycling project by students, staff, and faculty is expected to be high. Currently the school has a high level of awareness about the importance of recycling, but because there aren't any local recycling centers, the cost of has been prohibitive. The disposal problem will be eliminated by incorporating paper and cardboard collection into the tribal recycling program.

Placement of all bins will be near current waste containers. Custodial staff currently service the areas in question for litter control. The custodial staff will also collect and store recyclable materials. This proven method of collection and litter control will ensure that the container sites will be well maintained.

Composting

Composting is defined as the controlled biological decomposition of organic materials. Organic waste tends to be heavy because they contain water. Because of its heavy weight and rapid decomposition rate, waste generators should be discouraged from disposing organic waste into containers bound for the transfer station.

The fact that over 24% (301 tons) of Hoopa's Household waste is in a form which is readily compostable indicates the importance of developing a composting program. Organic waste should be one of the easiest components of the waste stream to reduce. With community education and support, Hoopa should be able to reduce the 301 tons of organic waste by 37 tons (figure 0.4).

An estimated 80% of Hoopa's organic waste is disposed of by residential households. The remaining 20% comes from local restaurants, grocery stores, tribal entities, and the school. Assisting waste generators to reduce their organic waste by 20% will be accomplished by promoting backyard composting, professional gardener composting, local commercial composting, and food scraps reused as animal food.

Backyard Composting - As 80% of organic waste is residential backyard composting is crucial to all reduction efforts. An aggressive public awareness campaign will be developed to inform residents of the benefits of composting. This campaign will include workshops presented through the University of California extension program and tribal environmental staff; brochures, newsletters, and radio shows explaining how to compost; and compost bin construction and selection pamphlets.

Professional Gardener Composting - Approximately 20% of the organic waste on the reservation is from areas maintained by professional gardeners. Tribal and school district gardeners will be given the opportunity to receive technical support on how to manage larger quantities of organic waste. This support will include bin placement and type selection, compost rotation, and finished product uses.

Restaurant and Produce Scraps - A food scrap reuse program will be analyzed to determine the pros and cons of encouraging local restaurants and markets to donate food scraps for animal food.

Local Commercial Composting - Small scale commercial composting can be profitable. Technical support will be made available to local hardware and entrepreneurs. This support will be similar to that given to professional

gardeners. One exception will be that special attention will be paid to packaging, marketing, and preparing different type of finish product.